1-2014

PHSX 206N.01: College Physics I Laboratory

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College Physics I Laboratory (PHSX 206N) Spring 2014

Instructor:	Dr. Alex Bulmahn
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Lab Times:	T 1-3 *or* W 1-3 *or* Th 1-3 *or* Th 3-5
Office Hours:	M 1-2:30, T 11-12, W 10:30-11:30, *and by appointment*
Web site:	http://cas.umt.edu/physics/labs.php
Required Materials:	Laboratory Notebook, Scientific Calculator, Weekly Labs (download from web site)
Suggested Materials:	Flash Drive
Corequisite:	PHSX 205N

Overview

The goal of the laboratories is to both aid students in quantitative laboratory techniques and conceptual understanding of physics. The material covered will be commensurate with the lecture courses with which the labs are paired. The quantitative laboratory techniques will include reading an array of measuring instruments, handling of error that results from the measuring instruments, understanding the distinction between precision and accuracy, and proper display of their data. It is essential that students keep up from the start as the concepts in this course build on each other.

Learning Objectives

The goals of this course are:

To teach students how to properly take measurements and record data.
To teach students how to interpret results both statistically and graphically.
To experimentally confirm theories presented in lecture.

Laboratory

There will be 11 two-hour labs during the semester. 10 of those labs will count towards the student's final grade. The reason for offering 11 labs but only counting 10 is so students may miss one lab (unplanned absence, or emergency) without consequence. Students with planned absences may attend a different laboratory section during the same week with the permission of both instructors. **Students are required to attend the labs, take measurements, and keep a notebook for each lab. There are no make-up labs.** At the beginning of the first lab, there is a section on laboratory techniques, which explains how to handle error analysis, graphing, and other key issues that come up while keeping a laboratory notebook.

Each week, a few days before lab, students should download and print a copy of the current lab, read it and bring it with them to their lab meeting. Students are expected to have read the instructions prior to arriving at the lab and to have completed a short pre-lab. Before performing the next experiment students will be given an open notebook quiz on the previous week's lab. Approximately ten to fifteen minutes will be alloted for completing the lab quizzes.

The experiments are designed to take approximately two hours for measurements and an additional two hours outside of class for data analysis as well as preparation for the next lab. This is consistent with time expectations for a one credit course.

Grading

Your course grade will depend on a combination of pre-labs and laboratory quizzes as follows:

Laboratory Quizzes:	90%
Pre-labs:	10%

This course can be taken for a traditional letter grade only. Due to the number of laboratory sections, we strive for consistency between sections. As a result, grades will fall within **roughly** the same distribution for each section. This distribution is 20-25% A's, 20-25% B's, 20-25% C's, and 20-25% D's and F's.

Note: The last day to add/drop via cyberbear is February 14. The last day to drop without the Dean's signature is April 7.

Academic Misconduct

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://life.umt.edu/vpsa/student_conduct.php.

Special Accommodations

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications.

For more information, please consult http://life.umt.edu/dss/.

Complaint Procedure

Any students experiencing issues with the way the material is being presented or with the way in which the course is being taught are welcome to come to me with their concerns. If you feel that you cannot speak with me about these issues, please see the department chair Dr. Dan Reisenfeld, CHCB 130.

Schedule

Week	Dates	Lab
Week 1	Jan 27–31	NO LAB
Week 2	Feb 3–7	Measuring Instruments
Week 3	Feb 10–14	Determination of Gravitational Acceleration
Week 4	Feb 17–21	Condition for Translational Equilibrium of an Object
Week 5	Feb 24–28	Hooke's Law
Week 6	Mar 3–7	Centripetal Force
Week 7	Mar 10–14	NO LAB
Week 8	Mar 17–21	Collisions
Week 9	Mar 24–28	Ballistic Pendulum
Week 10	Mar 31–Apr 4	SPRING BREAK–NO LAB
Week 11	Apr 7–11	Conservation of Angular Momentum
Week 12	Apr 14–18	Archimede's Priciple
Week 13	Apr 21–25	Standing Waves in Taut Cords
Week 14	Apr 28–May 2	Thermal Expansion of Metals
Week 15	May 5–9	NO LAB
Week 16	May 12–16	Final's Week–NO LAB